Developing an Evaluation Framework for Immersive Learning Experiences for Software Engineering Project Course

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ABSTRACT

Most of the principles and concepts that need to be taught in Software Engineering courses are hard to share the realistic experiences because it is difficult to give the student practical exposure to the insight and processes involved. There is a non-existent approach to conveying the concepts of applying Agile Scrum and Team Software Process (TSPi) that involve learner, instructor and business stakeholder. This paper will explain the concept of a framework for efficiently building an immersive learning environment for both learner and instructor of Software Engineering Project course with the involvement of business stakeholder. This provides an opportunity for learning to be more focused on learning design through the prism of immersive environments rather than the collection of information. The online surveys were disseminated to third-year students who took the Software Engineering Laboratory course and the projects' stakeholders. This study aims to gain feedback from both sides on the effectiveness and suitability of the framework and concept in teaching and learning the course. Our experience in the creation, conduct and iteration of the course is outlined in this paper. It ends by assessing the degree to which we were able to achieve the course objectives established by the students and stakeholders.

Keywords: immersive learning, software engineering, experience, knowledge management.

I   INTRODUCTION

In Computer Science, especially in Software Engineering courses, students' success and failure depend on the collaboration between the team members. The Software Engineering students must be taught on the theory and technical aspects of the software development discipline and the effectiveness of teamwork and social capabilities.

A significant component in Software Engineering courses is a software project development. The objective is to develop a software product for users or stakeholders who intend to use it regularly. Furthermore, students will learn to solve real industrial problems in the team. The Software Engineering students must not only be taught on the theory and technical aspects of the software development discipline, but also the effectiveness of teamwork and social capabilities.

TME3413 Software Engineering Laboratory (Jali, Masli, Shiang, Bujang, et al., 2017) is a course at the Faculty of Computer Science and Information Technology (FCSIT), UNIMAS. It offers to the third-year students of Software Engineering programme students who have grasped and self-equipped with the fundamentals of programming languages, scriptings, software modelling and database management system (DBMS). These skills and knowledge help the students to develop different kind of systems.

II   BACKGROUND

In coping with Future Ready Curriculum, a transformative delivery in teaching and learning such as Immersive Learning based on experience for the student to discover and share their experiential learning through hands-on and engagement with the industry and community (MOHE, 2018). Sharples states that Immersive Learning enables individuals to experience a situation as if they were there, using their expertise and tools to solve an issue or learn skills. In a virtual location, creating a feeling of partial immersive learning often involves Augmented Reality (AR) or Virtual Reality (VR) (2019). Applying Software Engineering project development with this learning pedagogy enables the students to experience real-world industry exposure with a real case study, stakeholder and the community. This allows the students to ask, learn strategies for solving problems and gain information by learning.

Immersive Learning Experiences focused on face-to-face teaching and blended learning methods that provide an impactful and meaningful learning experience to the students by allowing them to be actively engaged in tasks or projects that are not restricted to classroom settings (Carroll, 2014).

Students will experience communicating with the stakeholders (local entrepreneurs) and building a quality software product that requires understanding. Thus, students will learn to perform user analysis, identify a value proposition, and analyse user experience data. Furthermore, working in a team